

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in this application.

1. (currently amended) A cross-linked pair of polymerisable polymerizable monomer units unit having the structure:



where Q and Q' are polymerisable polymerizable units,

L and L' are linkers providing direct or indirect electronic communication between P and Q and Q', and

P is an electrofunctional unit,

wherein n = 1, 2, or 3, and

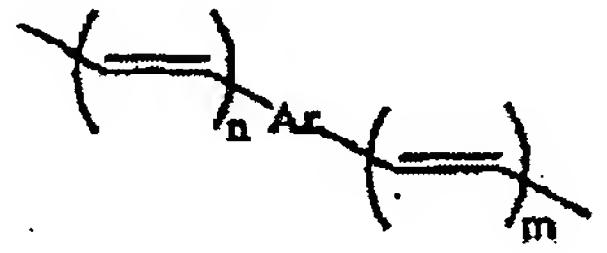
wherein m = 1, 2, or 3.

2. (currently amended) A The cross-linked pair of polymerisable polymerizable monomer units unit according to claim 1, wherein Q and Q' are substituted aromatic rings or heteroaromatic rings selected from the group comprising consisting of: substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan, pyrrole and substituted pyrrole.

3. (currently amended) A The cross-linked pair of polymerisable polymerizable monomer units unit according to claim 1, ~~or claim 2~~ wherein L and L' are selected from the group comprising consisting of:



and



wherein n = 1, 2, or 3,

wherein m = 1, 2, or 3,

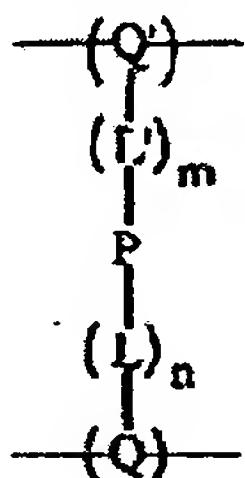
and Ar is selected from the group comprising phenyl, naphthyl, polyaryl, heteroaryl, and ferrocenyl ~~or similar metal sandwich complex~~.

4. (currently amended) A The cross-linked pair of polymerisable polymerizable monomer units unit according to claim 1, any one of the preceding claims where P is selected from the group comprising consisting of:

porphyrin,  
substituted porphyrin,  
phthalocyanine,  
substituted phthalocyanine, and  
tetranitrogen-containing macrocycle.

5. (currently amended) A The cross-linked pair of polymerisable polymerizable monomer units unit according to claim 1, any one of claims 1 to 4 wherein Q and Q' are of molecular dimensions sufficient to permit polymerisation polymerization of the monomer units of the cross-linked pair of polymerisable polymerizable monomer units as a homopolymer.

6. An electrofunctional unit cross-linked polymer comprising the structure:

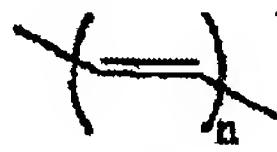


where Q and Q' are monomer units of the polymer,  
L and L' are linkers providing direct or indirect electronic communication between  
Q and P and between P and Q', and  
P is an electrofunctional unit, and  
wherein n = 0, 1, 2, or 3, m = 0, 1, 2, or 3, and the polymer is a copolymer when m  
and n = 0.

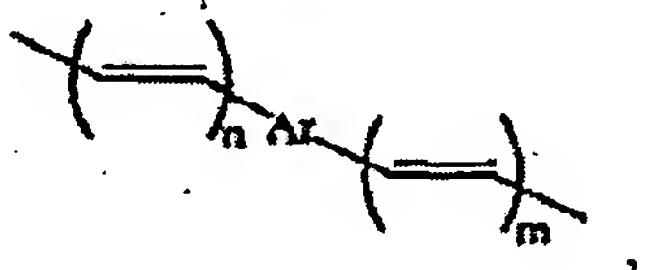
7. (currently amended) A n The electrofunctional unit cross-linked polymer according to claim 6 wherein Q and Q' are substituted aromatic rings or heteroaromatic rings selected from the group comprising consisting of:

substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan pyrrole and substituted pyrrole.

8. (currently amended) An The electrofunctional unit cross-linked polymer according to claims 6, or claim 7 wherein L is selected from the group comprising:



and



wherein  $n = 0, 1, 2,$  or  $3$ ,  $m = 0, 1, 2,$  or  $3$ , and the polymer is a copolymer when  $m$  and  $n = 0$ , and Ar is selected from the group comprising phenyl, naphthyl, polyaryl, heteroaryl, and ferrocenyl or similar metal sandwich complex.

9. (currently amended) An The electrofunctional unit cross-linked polymer according to ~~any one of claims 6 to 8~~ claim 6, wherein P is selected from the group comprising consisting of:

porphyrin,

substituted porphyrin,

phthalocyanine,

substituted phthalocyanine, and

tetranitrogen-containing macrocycle.

10. (currently amended) An The electrofunctional unit cross-linked polymer according to ~~any one of claims 6 to 9~~ claim 6, wherein the polymer is a copolymer of the monomer units Q and Q' and at least one other monomer unit.

11. (currently amended) An The electrofunctional unit cross-linked polymer according to claim 10, wherein the other monomer unit is a substituted aromatic or heteroaromatic ring.

12. (currently amended) An The electrofunctional unit cross-linked polymer according to claim 11 wherein the other monomer unit is selected from the group comprising consisting of:

substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene,

oligothiophene, furan, substituted furan, pyrrole, and substituted pyrrole.

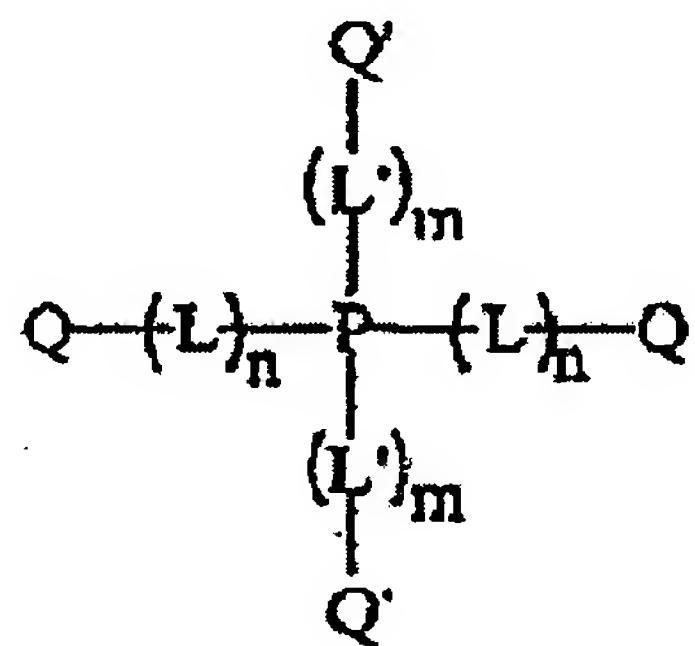
13. (currently amended) ~~An~~ The electrofunctional unit cross-linked polymer according to claim 12, wherein the other monomer unit is terphiphene.

14. (currently amended) ~~An~~ The electrofunctional unit cross-linked polymer according to ~~any one of claims 6 to 13~~ claim 6, wherein the electrofunctional unit is coordinated with a metal.

15. (currently amended) ~~An~~ The electrofunctional unit cross-linked polymer according to claim 14, wherein the metal is zinc.

16. (currently amended) ~~An~~ The electrofunctional unit cross-linked polymer according to ~~any one of claims 6 to 15~~ claim 6, wherein the polymer has been prepared by electropolymerisation electropolymerization.

17. (currently amended) A cross-linked quartet of polymerisable polymerizable monomer units unit having the structure:



wherein:

Q and Q' are the polymerisable polymerizable monomer units,

L and L' are linkers providing direct or indirect electronic communication between P and Q and Q',

P is an electrofunctional unit,

n = 1, 2, or 3, and

m = 1, 2, or 3.

18. (currently amended) A The cross-linked quartet of polymerisable polymerizable monomer units unit according to claim 17, wherein Q and Q' are substituted aromatic rings or heteroaromatic rings selected from the group comprising consisting of: substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan, pyrrole and substituted pyrrole.

19. (currently amended) A The cross-linked quartet of polymerisable polymerizable monomer units unit according to claim 17, ~~or claim 18~~ wherein L is selected from the group comprising consisting of:

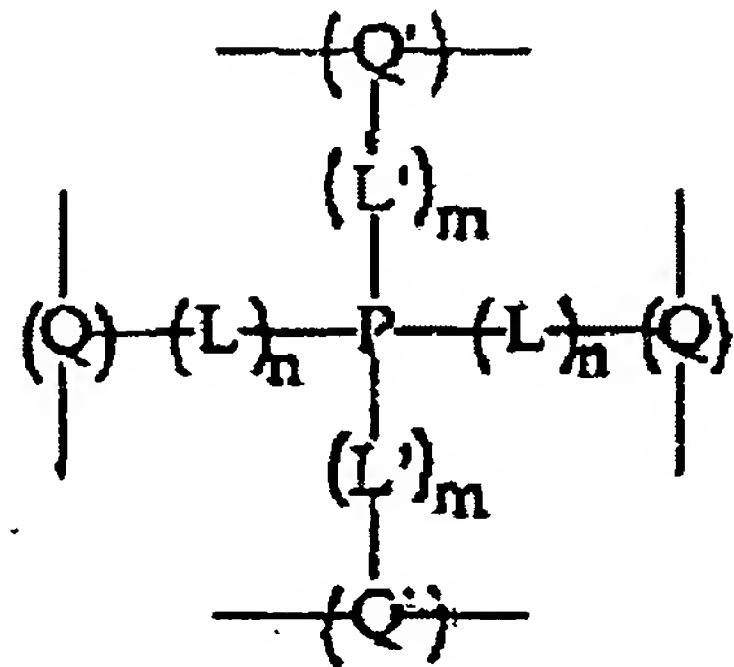


wherein n = 1, 2, or 3, m = 1, 2, or 3, and Ar is selected from the group comprising consisting of phenyl, naphthyl, polyaryl, heteroaryl, and ferrocenyl ~~or similar metal sandwich complex~~.

20. (currently amended) A The cross-linked quartet of polymerisable polymerizable monomer units unit according to claim 17 or claim 18 where P is selected from the group comprising consisting of:  
porphyrin,  
substituted porphyrin,  
phthalocyanine,  
substituted phthalocyanine, and  
tetranitrogen-containing macrocycle.

21. (currently amended) A The cross-linked quartet of polymerisable polymerizable monomer units according to any one of claims 17 to 20 wherein Q and Q' are of molecular dimensions sufficient to permit polymerisation polymerization of the monomer units of the cross-linked quartet of polymerisable polymerizable monomer units as a homopolymer.

22. (currently amended) An electrofunctional unit cross-linked polymer comprising the structure:



where Q and Q' are monomer units of the polymer,  
L and L' are linkers providing direct or indirect electronic communication between  
Q and P and between P and Q', and  
P is the electrofunctional unit,  
wherein n = 0, 1, 2, or 3, m = 0, 1, 2, or 3, and the polymer is a copolymer when m  
and n = 0.

23. (currently amended) An The electrofunctional unit cross-linked polymer according to claim 22, wherein Q and Q' are substituted aromatic rings or heteroaromatic rings selected from the group comprising consisting of:  
substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan, pyrrole, and substituted pyrrole.

24. (currently amended) An The electrofunctional unit cross-linked polymer according to ~~claims 22 or claim 23~~ claim 22, wherein L is selected from the group comprising consisting of:



wherein n = 0, 1, 2, or 3, m = 0, 1, 2, or 3, the polymer is a copolymer when m and/or n = 0, and Ar is selected from the group comprising consisting of phenyl, naphthyl, polyaryl, heteroaryl, and ferrocenyl ~~or similar metal sandwich complex~~.

25. (currently amended) An electrofunctional unit cross-linked polymer according to ~~any one of claims 22 to 23~~ claim 22 wherein P is selected from the group comprising:  
porphyrin  
substituted porphyrin  
phthalocyanine  
substituted phthalocyanine  
tetranitrogen-containing macrocycle.

26. (currently amended) An electrofunctional unit cross-linked polymer according to ~~any one of claims 22 to 25~~ claim 22 wherein the polymer is a copolymer of the monomer units Q and Q' and at least one other monomer unit.

27. (original) An electrofunctional unit cross-linked polymer according to claim 26 wherein the other monomer unit is a substituted aromatic or heteroaromatic ring.

28. (original) An electrofunctional unit cross-linked polymer according to claim 27 wherein the other monomer unit is selected from the group comprising:  
substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene,  
oligothiophene, fwan, substituted furan, pyrrole and substituted pyrrole.

29. (original) An electrofunctional unit cross-linked polymer according to claim 28 wherein the other monomer unit is terphiphene.

30. (currently amended) An electrofuncation unit cross-linked polymer according to ~~any one of claims 26 to 29~~ claim 26, wherein the ratio of P to the at least one other monomer unit is 1 :2.

31. (currently amended) An electrofunctional unit cross-linked polymer according to ~~any one of claims 22 to 30~~ claim 22, wherein the electrofunctional unit is coordinated with metal.

32. (original) An electrofunctional unit cross-linked polymer according to claim 31 wherein the metal is zinc.

33. (currently amended) An electrofunctional unit cross-linked polymer according to ~~any one of claims 22 to 32~~ claim 22 wherein the polymer has been prepared by electropolymerisation.

34. (currently amended) A cross-linked pair of monomer units, cross-linked quartet of monomer units, polymer, or copolymer according to ~~any one of the preceding claims~~ claim 1 further including a solubilising group.

35. (original) A cross-linked pair of monomer units, cross-linked quartet of monomer units, polymer, or copolymer according to claim 34 wherein the solubilising group includes a  $\text{SO}_3^-$  moiety.

36. (currently amended) An electrofunctional material including a base material and an electrofimctional unit cross-linked polymer according to ~~any one of claims 6 to 16 or 22 to 33~~ claim 6.

37. (currently amended) An electrofunctional material including a base material and a copolymer according to ~~any one of claims 10 to 16 or 26 to 33~~ claim 6.

38. (currently amended) A method of preparing an electrofunctional material comprising the steps of treating a base material with a cross-linked pair or quartet of polymerisable monomer units according to ~~any one of claims 1 to 5 or 17 to 21~~ claim 1 and subsequently polymerising the cross-linked pair or quartet of polymerisable monomer units.

39. (currently amended) A method of preparing an electrofunctional material according to claim 38 respectively, further including the step of adding at least one other monomer unit prior to polymerising.

40. (original) A method according to claim 39 wherein the at least one other monomer unit is selected from the group comprising: substituted aromatic, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan, pyrrole and substituted pyrrole.

41. (currently amended) An electrofunctional material according to claim 36 or  
~~claim 37~~ wherein the base material is textile, glass or metal.

42. (currently amended) A method according to ~~any one of claims 38 to 40~~ claim 38, wherein the base material is textile, glass or metal.

43. (currently amended) A method according to ~~any one of claims 38 to 40~~ claim 38, wherein the polymerising is by chemical or electrochemical oxidation.

44. (currently amended) Method of light harvesting comprising the steps of applying a polymer or copolymer according to ~~any one of claims 6 to 16 or 22 to 33~~ claim 6, to a surface, applying light to the resultant surface, or exposing said surface to light, and capturing the resultant current.

45. (currently amended) Method of light harvesting comprising the steps of applying one or more components selected from the group comprising a cross-linked pair or quartet of polymerisable monomer units according to ~~any one of claims 1 to 5 or 17 to 21~~, Respectively, claim 1 to a surface, polymerising such units in situ, optionally in the presence of another monomer, polymer or copolymer, applying light to the resultant surface, or exposing said surface to light, and capturing the resultant current.

46. (currently amended) A method according to claim 44 or ~~claim 45~~, wherein the another monomer is selected from the group consisting of benzene, substituted benzene, aniline, substituted aniline, thiophene, substituted thiophene, oligothiophene, furan, substituted furan , pyrrole and substituted pyrrole.

47. (currently amended) A photovoltaic device incorporating a polymer according to ~~any one of claims 6 to 16 or 22 to 33~~ claim 6.

48 to 54 (canceled).